

A1
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attachment apparatus is described in U.S. Patent No. 5,024,001, entitled "Wheel Alignment Rim Clamp Claw" issued to Borner et al. on June 18, 1991, incorporated herein by reference. The target elements 136 are positioned on the target body 134. Examples of target bodies 134 and target elements 136 acceptable for use in the invention are described in U.S. Patent No. 5,724,743.

At page 6, the last paragraph:

A2

In operation, once the position determination system 100 has been calibrated using a calibration target (not shown), as described in the incorporated references, a vehicle can be driven onto the rack 140, and, if desired, the vehicle lifted to an appropriate repair elevation. The targets 118, 120, 122, 124, once attached to the wheel rims, are then oriented so that the target elements 136 on the target body 134 face the respective camera 110, 112. The vehicle and model year can then entered into the vision imaging system 102 along with other identifying parameters, such as vehicle VIN number, license number, owner name, etc.

At page 8, the last paragraph, bridging pages 8 and 9:

A3

The information obtained about the wheels 126, 128, 130, 132 can also include a measure of skew. When the figure defined by the wheels 126, 128, 130, 132 is a trapezoid or parallelogram instead of a rectangle, skew is a measure of the difference between the trapezoid or parallelogram with the square. For example, diagonal lines 158, 160 can be respectively drawn between the left, front wheel 126 and the right, rear wheel 132 and between the right, front wheel 130 and the left, rear wheel 128. One

A3
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measure of skew is the difference between the length of these diagonal lines 158, 160. If, for example, diagonal line 158 is longer than diagonal line 160, the rear wheels 128, 130 are skewed to the right. Conversely, if diagonal line 158 is shorter than diagonal line 160, the rear wheels 128, 130 are skewed to the left. The position determination system 100 can display the length of the diagonal lines 158, 160 and can also compare the diagonal lines 158, 160 to each other. Additionally, the position determination system can compare the length of the diagonal lines to a desired range of lengths for the particular vehicle being measured.

At page 9, the first full paragraph:

A4

Another measure of skew is to compare the skew angles 162a, 162b between the wheel tracks 150, 152 and the diagonal line 158 from the left, front wheel 126 to the right, rear wheel 132 and the skew angles 164a, 164b between the wheel tracks 150, 152 and the diagonal line 160 from the right, front wheel 130 to the left, rear wheel 128. If, for example, skew angles 162a, 162b are smaller than skew angles 164a, 164b, this indicates that the rear wheels 128, and the front wheels 130 are skewed to the right. Conversely, if skew angles 162a, 162b are larger than skew angles 164a, 164b, the rear wheels 128, and the front wheels 130 are skewed to the left. The position determination system 100 can display the skew angles 162a, 162b, 164a, 164b and can also compare skew the angles 162a, 162b, 164a, 164b to one another. Additionally, the position determination system can compare the skew angles 162a, 162b, 164a, 164b to a desired range of skew angles for the particular vehicle being measured.
